

WHAT IS CLAIMED IS:

1. A mutant rabies virus comprising a rabies virus N protein, wherein said N protein is not phosphorylated.
2. A mutant rabies virus comprising a mutant rabies virus N protein, wherein said N protein comprises an amino acid other than serine at position 389.
3. The mutant rabies virus of Claim 2, wherein the amino acid at position 389 is a neutral amino acid.
4. The mutant rabies virus of Claim 2, wherein the amino acid at position 389 is alanine, glycine, glutamine, glutamic acid, aspartic acid or asparagine.
5. The mutant rabies virus of Claim 4, wherein the amino acid at position 389 is alanine.
6. The mutant rabies virus of Claim 2, wherein said mutant rabies virus N protein is encoded by SEQ ID NO:62, SEQ ID NO:63 or SEQ ID NO:64.
7. The mutant rabies virus of Claim 6, wherein said mutant rabies virus N protein is encoded by SEQ ID NO:62.
8. The mutant rabies virus of Claim 1, further comprising a mutant G glycoprotein.
9. The mutant rabies virus of Claim 8, wherein said G glycoprotein comprises an amino acid other than arginine at position 333.

10. The mutant rabies virus of Claim 9, wherein said G glycoprotein comprises a Glu at position 333.

11. A vaccine composition comprising the mutant rabies virus of Claim 1 and a pharmaceutically acceptable carrier.

12. A vaccine composition comprising the mutant rabies virus of Claim 2 and a pharmaceutically acceptable carrier.

13. A vaccine composition comprising the mutant rabies virus of Claim 3 and a pharmaceutically acceptable carrier.

14. A vaccine composition comprising the mutant rabies virus of Claim 5 and a pharmaceutically acceptable carrier.

15. A vaccine composition comprising the mutant rabies virus of Claim 6 and a pharmaceutically acceptable carrier.

16. A vaccine composition comprising the mutant rabies virus of Claim 7 and a pharmaceutically acceptable carrier.

17. A vaccine composition comprising the mutant rabies virus of Claim 8 and a pharmaceutically acceptable carrier.

18. A vaccine composition comprising the mutant rabies virus of Claim 9 and a pharmaceutically acceptable carrier.

19. A vaccine composition comprising the mutant rabies virus of Claim 10 and a pharmaceutically acceptable carrier.

20. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 11 effective to induce said immune response.

21. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 12 effective to induce said immune response.

22. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 13 effective to induce said immune response.

23. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 14 effective to induce said immune response.

24. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 15 effective to induce said immune response.

25. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 16 effective to induce said immune response.

26. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 17 effective to induce said immune response.

27. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 18 effective to induce said immune response.

28. A method of inducing an immune response to rabies virus in a mammal, comprising administering to said mammal an amount of the vaccine composition of Claim 19 effective to induce said immune response.

29. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 11 effective to protect said mammal from infection by rabies virus.

30. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 12 effective to protect said mammal from infection by rabies virus.

31. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 13 effective to protect said mammal from infection by rabies virus.

32. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 14 effective to protect said mammal from infection by rabies virus.

33. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 15 effective to protect said mammal from infection by rabies virus.

34. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 16 effective to protect said mammal from infection by rabies virus.
35. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 17 effective to protect said mammal from infection by rabies virus.
36. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 18 effective to protect said mammal from infection by rabies virus.
37. A method of protecting a mammal from rabies, comprising administering to said mammal an amount of the vaccine composition of Claim 19 effective to protect said mammal from infection by rabies virus.
38. A host cell for production of the mutant rabies virus of Claim 1, comprising a mammalian host cell which produces a wild-type rabies virus N protein.
39. The host cell of Claim 30, wherein said host cell is a hamster cell.
40. The host cell of Claim 31, wherein said host cell is a BHK cell.
41. The host cell of Claim 32, wherein said host cell was deposited as deposit number ATCC PTA-3544.
42. A method for producing a mutant rabies virus, comprising growing said mutant rabies virus in the host cell of Claim 38.

43. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 1.

44. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 2.

45. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 3.

46. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 4.

47. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 5.

48. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 6.

49. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 7.

50. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 8.

51. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 9.

52. A vector for delivering a gene to a cell of a human or animal, comprising the gene to be delivered operably inserted in the mutant rabies virus of Claim 10.

53. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 43.

54. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 44.

55. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 45.

56. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 46.

57. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 47.

58. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 48.

59. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 49.

60. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 50.

61. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 51.

62. A method for delivering a gene to a cell of a human or animal, comprising administering to the human or animal the vector of Claim 52.